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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,884	05/21/2004	Tsuyoshi Kaneko	119593	8590

25944 7590 06/30/2006

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EXAMINER

SANDVIK, BENJAMIN P

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/849,884

Applicant(s)

KANEKO, TSUYOSHI

Examiner

Ben P. Sandvik

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9, 14, 15 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9, 14, 15 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 3/10/2006 have been fully considered but they are not persuasive. Firstly, the applicant argues that the fine particle dispersion solution 14 that is disclosed in Fig. 4 of Furusawa is not a resin. The examiner has already conceded in the final rejection that Furusawa does not teach a resin, however, the Matsuda reference does teach a resin (see Fig. 7B and Col 5 Ln 21-26 of Matsuda). The final rejection addresses the deficiency of Furusawa by combining UV precursor of Matsuda to teach the limitations of claim 9. Applicant's further arguments in regard to the Matsuda reference have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 14, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furusawa (U.S. PG Pub #20020151161), in view of Matsuda et al (U.S. Patent #5666270), further in view of Schreiber et al (U.S. Patent #5790377).

With respect to **claim 9**, Furusawa teaches forming a liquid-repelling part with a liquid-repelling characteristic for droplets (Fig. 3, 11b) and a liquid-

attracting part (Fig. 3, 11a) that is more wettable than the liquid-repelling part for the droplets on an upper surface of an insulating layer (Paragraph 21), discharging the droplets onto the liquid-attracting part to form a protruding part (Paragraph 50, "ink jet method"); and that discharging the droplets comprises discharging the droplets on the insulating layer (Fig. 4, 14); but does not teach that the droplets include a precursor of UV-hardening resin, hardening the protruding part precursor by applying UV rays to form a protruding part; or forming a conductive layer so as to cover the protruding part. Matsuda teaches a resin precursor that is hardened by UV rays (Fig. 7B and Col 5 Ln 21-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to discharge droplets of UV-hardening resin onto the insulating layer of Furusawa as taught by Matsuda in order to create a bump core that has a small stiffness and is flexible. Schreiber teaches forming a conductive layer covering the protruding part (Fig. 1, 16/18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a conductive layer on the protruding part of Furusawa as taught by Schreiber in order to allow the substrate to be flip-chip bonded to an integrated circuit chip.

With respect to **claim 14**, Furusawa teaches that before the protruding part precursor is formed (Fig. 4, 14), a liquid repelling treatment is carrier out on a region adjacent to a region in which the protruding part precursor is formed (Fig. 3).

With respect to **claim 15**, Furusawa teaches that the droplets are discharged using an ink jet method (Paragraph 50).

With respect to **claim 22**, Furusawa does not teach sandwiching the protruding part between the conductive layer and the insulating layer on which the droplets are discharged. Schreiber teaches sandwiching a protruding resin bump (Fig. 1, 22) between a substrate and a conductive layer (Fig. 1, 16/18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to sandwich the protruding part between the insulating layer of Furusawa and a conductive layer as taught by Schreiber in order to cover the protruding part and facilitate a better electrical connection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben P. Sandvik whose telephone number is (571) 272-8446. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

bps


EVAN PERT
PRIMARY EXAMINER